NOTES AND MEMORANDA.

A Scheme of Eugenic Reform.

An influential correspondent, who has given much thought to the subject, but who desires to remain anonymous, sends the following brief outline of what he regards as an effective scheme of Eugenic reform. He is, we gather, driven to this conclusion because he holds that sterilization is impracticable and the advocacy of birth control will relatively diminish the numbers of the fit. Coming from the quarter it does, the scheme is well worthy of consideration. We certainly earnestly wish that such an examination as is proposed could be brought within the region of practical politics.

I.—Everyone to undergo a medical and psychological examination as for Life Insurance at say 18, and to be classed under A, B, or C.

A.—First Class.

B.—Bodily and Mental condition good enough for mating.

C.—Sub-normals, who should not breed.

Each to know his or her class, but this knowledge to be confidential.

II.—No one to marry without making known his or her classification—to those who should know it.

III.—Sub-normals not to marry unless the woman is over 45 years of age.

There remains the case of illegitimate connexions. It might be made penal for a sub-normal to form such a connexion with a woman under 45.

In this way a strong public opinion would be created.

The responsibility would be thrown upon the individual in a way that in many cases would be effective. The C. men would know that they could always marry by choosing a woman of the right age.

The Genesis of Twins.

To the Editor of the EUGENICS REVIEW:—

Dear Sir,

In the July issue of the "Review" there appears a paper by Mr. R. A. Fisher entitled "the Genesis of Twins." In the paper Mr. Fisher states that the mathematical analysis of a series of measurements of 50 pairs of twins made by Thorndike in New York has led Mr. Fisher to put forward the "tentative hypothesis," that all human

twins result from the fertilization of a single ovum by two spermatozoa; and that in consequence the supposed distinction between ordinary twins which were supposed to result from the fertilization of distinct ova and identical twins which were believed to result from the division of a normally fertilized ovum is invalid.

I wish very briefly to explain the biological arguments against accepting Mr. Fisher's view.

(1) The human race belongs to the Mammalian class amongst which multiple births are the rule; these births are believed by all zoologists to result from the fertilization of distinct ova; to assume that they are due to a different cause amongst Mankind is to make a supposition which is entirely at variance with the concordance of human anatomy, embryology and physiology with those of other mammals.

(2) When the Mammalian ovum is dehisced from the ovary, it leaves behind it a little bleeding scar which becomes subsequently changed into a yellow cicatrice which is known as the corpus luteum or "yellow body." Cases are on record where a woman has died in pregnancy and twins have been found in her womb. In some of these cases, two corpora lutea have been found on the ovaries, proving that two ova have been discharged.

(3) A woman occasionally bears triplets and Mr. Fisher's theory affords no explanation of such cases.

(4) Polyspermy or the entry of an ovum by more than one spermatozoon is a well-known phenomenon and is widely distributed throughout the animal kingdom but in no case does it result in the formation of twins. Its results differ with the size of the eggs affected thus:—

(*a*) In the case of very small eggs (and the human egg is one of the smallest known) it results in abnormal development and death. One of the spermatozoa unites with the ovarian nucleus. Whilst the other forms an independent centre of cell-division. The consequence is that at the first division the ovum divides into four cells but spindle-fibres are usually formed between all four nuclei, leading to tetraster mitotic figures and irregular distribution of the chromosomes which render normal development impossible.

(*b*) In the case of eggs of moderate size such as that of the Frog it results in the supernumerary spermatozoa forming independent centres of cell-division, but all the cells so produced are moulded into the building up of *one normal embryo*. In the body of this embryo the regions contributed by the cell division started by the extra spermatozoa can be discriminated by the small size of their nuclei; for the spermatozoon which fuses with the ovarian nucleus gives rise to a larger nucleus than one which results from the transformation of the head of one of the extra spermatozoa.

(*c*) In the case of large eggs like those of the hen, polyspermy is the rule. One spermatozoon fuses with the ovarian nucleus and gives rise to cell-formation which is built up into the body of the embryo; the other spermatozoa give rise to independent cells—formerly known as "free-cells" whose origin was long a puzzle to the embryologist. These free cells are crushed and killed as the vigorous embryonic body increases in extent.

Thus it will be seen that every known relevant fact of Embryology is at variance with Mr. Fisher's Theory. If Mr. Fisher asks how we are to account for his figures, we reply that we feel under no obligation to do so. Values deduced from an examination of 100 cases seem to us far too small a basis on which to erect any theory of heredity whatever. Mathematical analysis is capable of rendering valuable aid to the biologist no less than to the student of other sciences, but mathematics divorced from the study of biology is an untrustworthy guide in the study of heredity.

E. W. MACBRIDE.

Inheritance of Mental Qualities.

The Editor, THE EUGENICS REVIEW.

Dear Sir,

With reference to the recent discussion on the inheritance of mental qualities, it occurred to me that the following provides a good crucial test and if time had permitted I had intended to bring it forward. 'Hereditary Genius' provides us with abundant evidence of high ability running in families. On this evidence Galton framed the hypothesis that this was due to inheritance. The book was published in 1869. Now if the high ability was due to hereditary tendency, then later members of these same families should also exhibit an abnormally high level of intelligence. Do they?

I cannot lay claim to have considered the subject exhaustively, but one hour with "Hereditary Genius" and a "Who's Who" convinced me that there was a strong prima facie case worthy of detailed examination.

For instance, Galton found that of the 286 Judges between 1660 and 1865, 112 had eminent relations. Of these 112, 19 were "Victorian" Judges. I looked up the family name in 17 of these cases (omitting two by error) and found that they had the following living relatives:

1. Judge, High Court, Scotland.
2. Judge, High Court, England.
3. Ex. Gov. Gen., Australia.
4. Stanhope and Chancellor's Prize Essayist, Oxford, Ex.-M.P.
5. Fellow of Trinity, Cambridge (his father and grandfather were also fellows of the College. *Spectator* please note).
6. Bishop of Norwich.
7. Attorney General, England.
8. Ex. Viceroy, India.
9. Headmaster, Rugby.

Again, in the case of the Senior Classics, Galton mentions 15 as having eminent relations. Of these I could trace gifted relations in five cases and to the number of eleven. The Butlers alone furnish six. Confining attention to eminence in the Classics alone, J. R. M. Butler was First Chancellor's Medallist in Classics. (There are no Senior Classics at Cambridge since 1882). His father had been Senior Classic

and his grandfather Senior Wrangler. (*Spectator* please note). In another case a Senior and Second Classic of the previous generation were succeeded by a Second Chancellor's Medallist in this. There is also an instance since 1869 of a man who was bracketed equal Senior Classic having a son who was Senior Classic.

The Judges and the Senior Classics alone furnish sufficient present day material on which to generalise but in the other lines we observe instances. Amongst the Statesmen the Cecils are still prominent. Galton mentions five British families amongst Commanders; the scion of one of these, General Lawrence, had risen to the top at the end of the Great War although handicapped by being a "dug-out." And should we overlook Mr. Winston Churchill? Amongst literary people I noted the Trevelyans and among Scientists, has not a Darwin of the fifth successive generation, from father to son, recently been recommended for the Fellowship of the Royal Society, a lengthier dynasty than any occupying the throne of England for centuries.

My cursory examination dealt only with living persons connected with those mentioned by Galton through males. It takes no account of those who may have achieved fame and died in the 52 years since 1869. Nor does it include any related through females and therefore having a different surname. One such, a youth of great promise killed in the war, came to my notice this week in a *Times* obituary. He had been sixth wrangler. His maternal grand-uncle was a senior classic.

Yours faithfully,

July 15th, 1922. B. S. BRAMWELL.

A propos of Mr. Harold Cox's lecture the following note on the size of Bishop's families may be of interest. The figures were gathered from Burke taking intervals of five years since 1890. A few cases may therefore have been missed. The total number of Bishops was 150; of these 16 were unmarried and in 8 cases no particulars were given as to the family. These 24 cases are omitted from the table given.

Year of Marriage.	Marriages.	Average size of family.
1836-45	8	6.25
1846-55	10	5.50
1856-65	19	5.16
1866-75	25	5.52
1876-85	26	4.00
1886-95	22	3.77
1896-1910	16	2.00

B.S.B.